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MEMORANDUM FOR: /
Defense Intelligence School
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SUBJECT : Siberian Development

Per your request of 12 January, attached are several unclassified articles on industrial development in Siberia and use of the Tran-Siberian Landbridge.

Office of Research

Attachment
As stated.

26 January 1976

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Landbridge Traffic Soars

Annual freight volume on the TransSiberian Landbridge has soared since the Soviets introduced the service in 1971. Landbridge is presently carrying nearly 20 percent of the 500,000 containers moving annually between the Far East and Western Europe. Its share of traffic between these major trading areas will continue to increase as the Soviets offer more attractive rates for the service.

In 1971, the Soviets began offering to haul containers overland from the Pacific Ocean to the Baltic Sea at rates 25% below those on all-sea routes. Previously, most goods moving between the two widely-separated regions had moved by ship. When the service began, handling facilities were crude and service was erratic and plagued by delays.

In the past four years, the Soviets have built container-handling facilities on the Pacific coast at Nakhodka and Vladivostok and have double-tracked major sections of the TransSiberian rail line. On the Baltic Sea, Moscow has expanded container facilities at Leningrad and Riga to handle increasing volumes of Landbridge traffic. In addition, existing rail service to Europe has recently been supplemented with service to Iran.

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The Outlook for Development In the Soviet Far East

THE FAR EAST: PROBLEMS AND PROSPECTS. (By F. Dyakonov, section head of the U.S.S.R. State Planning Committee's Council for the Study of Productive Forces. *Ekonomicheskaya gazeta*, No. 5, January, 1975, p. 13. 1,800 words. Abstract:) An accelerated increase in the economic potential of the Far East will make it possible to eliminate a certain lag that exists between this region and other parts of the country in a number of indices and to increase the effectiveness of its share in the all-Union territorial division of labor.

Abstract

It is also necessary to eliminate the lag in the development of the Far East's infrastructure by ensuring the rapid growth of the power industry, repair facilities, transportation, port facilities and a number of other branches of the economy in the region. In terms of long-range prospects, it is urgent that the standard of living rise faster in the Far East than in the central portion of the country.

In the first stage of the long-range future, conditions in the region determine that the development of export will focus primarily on raw materials and semifinished products (timber, coking coal, oil, gas, wood pulp). Subsequently, cast iron, fertilizer, organochlorine products, machines and paper will become highly important export items.

Solution of the complex transportation problems of the Far East will largely determine the region's rate of development. Construction of the Baikal-Amur railroad (BAM) is of the utmost importance in this connection.

BAM, which is to extend 3,200 km. and cost no less than 6,000,000,000 rubles, is scheduled to go into temporary operation in 1982 and full operation in 1983. Once completed, the railroad will carry 35,000,000 tons of cargo eastward, including 25,000,000 tons of crude oil. In the second half of the 1980s, the volume of cargo should approach 70,000,000 to 75,000,000 tons.

Construction of BAM will be an important factor in developing the economy of neighboring territories. Many large mineral deposits have already been discovered or forecast along the main line and its branches.

BAM is surrounded by vast tracts of forest. There are plans to set up 10 lumber-industry enterprises in these areas; their total output will be 5,000,000 to 6,000,000 cubic meters of wood per year. BAM will have a tremendous impact on the formation of the Zeya-Svobodny territorial production complex and will increase the economic possibilities of the Komsomolsk-on-Amur industrial center. It will also create the preconditions for the industrial operation of hydropower resources in the regions of the Gilyui River, the Zeya, the Selendzha, the Bureya and others.

In accordance with the planned rapid growth of the U.S.S.R.'s trade and economic relations with the countries of the Pacific Ocean and the Indian Ocean, BAM will be carrying an ever increasing amount of lumber, oil, coal, pulp, paper and non-ferrous metal for export. In this connection, the question of creating a large seaport in the Sovetskaya Gavan region to receive export cargo from BAM has become urgent. Calculations confirm the economic effectiveness of running an oil pipeline from the Urals and a gas pipeline from the Vilyuisk gas deposits to this port as well. If the pipelines are installed, it will also be advisable to construct in the Sovetskaya Gavan region a large refinery for export oil and a gas condensate plant (or a methanol plant). Conditions are also favorable for the construction of a pulp-and-paper enterprise here.

The creation of a large metallurgical base in the Far East has become an urgent task. The siting here of a plant with an annual production capacity of 9,000,000 tons of cast iron, 10,000,000 tons of steel and 8,700,000 tons of rolled metal would be completely justified.

The resources base for ferrous metallurgy in the Far East is a unique combination of coking coal and iron ore deposits in southern Yakutia. To ensure the swiftest possible development of southern Yakutia's coking coal deposits, a general agreement has been concluded with Japan; under this agreement,

the U.S.S.R. is to receive \$450,000,000 in credit in exchange for coal. The 10th and 11th Five-Year Plans for southern Yakutia provide for the construction in Neryungra of an open-pit mine with a capacity of 12,000,000 tons of coal per year and for the construction of a concentrating mill, a hydroelectric power station and other facilities. A railroad from BAM to the deposit will be completed in 1978.

There are plans to create a gas industry complex in the Vilyui River basin. Gas reserves here are estimated at 12,000,000,000,000 cubic meters. The arrival of gas at industrial centers will create favorable preconditions for the construction of chemical complexes in the southern part of the Far East. The great possibilities for the export of gas also contribute to the urgency of creating a gas industry complex in the Far East.

Favorable timber conditions and increasing possibilities for export to countries of the Pacific Ocean and Indian Ocean necessitate the rapid development of the pulp-and-paper industry in the Far East.

The U.S.S.R. State Planning Committee's Council for the Study of Productive Forces has proposed and substantiated the building of a large-capacity chemical complex in the Komsomolsk-on-Amur region. West Siberian oil, Yakut natural gas, southern Yakut coking coal, apatite and phosphorite in the Uda-Selendzha region can serve as the raw-materials base here.

Minerals in the middle-northern and far-northern areas of the economic region should be exploited. In particular, the Agytkina copper and tungsten deposit, the Deputatsky tin deposit, the west Polyanskoye mercury deposit, the Sardona polymetallic deposit, and others should be developed.

Calculations confirm the economic effectiveness of constructing in the Maritime Territory a plant to produce 1,100,000 tons of alumina per year from the processing of imported bauxite. The alumina from the plant would go to aluminum plants in East Siberia, and the resulting aluminum would be exported to countries of the Pacific Ocean basin. Large quantities of cheap electric power will subsequently make it expedient to construct an aluminum plant in the Maritime Territory.

At present, per-capita output of electricity in the Far East is somewhat lower than that for the country as a whole. The working and living conditions of this region, however, require more electricity than conditions in the country as a whole. It is therefore necessary to expand existing electric power stations and construct new ones.

It is a matter of extreme urgency that the cost of producing electricity be reduced. Providing industrial centers in the southern portion of the Far East with Yakut gas can be of great help in this connection. The idea of constructing a 10,000,000-kw. tidal power station in the Tugur Strait has aroused a great deal of interest. According to estimates, the cost of this station would be below the average cost of constructing power stations in the country as a whole.

Planned capital investments necessitate serious development of the region's construction capabilities. At present, they are far inferior to the construction capabilities of the country as a whole, not to mention those of the most highly developed parts of the country.

The rapid development of productive forces in the Far East will greatly increase the production efficiency and economic potential of the entire country.

Soviet-Japanese Trade Thrives: A 'New Era' of Large-Scale Projects

BRIDGE ACROSS THE SEA: — Economic Cooperation Between the Soviet Union and Japan Is Developing Successfully. (By Special Correspondent V. Syrokonsky. *Literaturnaya gazeta*, No. 14, April 2, p. 14. 3,900 words. Abstract:) Tokyo, March — Editors' Note. — Trade relations between the Soviet Union and Japan provide convincing evidence that the Soviet policy aimed at detente, good-neighbor relations and mutually advantageous cooperation among states with different social systems — a policy that has been persistently and skillfully carried out by our party — is bearing fruit and is helping step by step to overcome long-standing prejudices and distrust.

Abstract

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have applied to regain jurisdiction over the lake; they calculate that in three or four years it could again yield carp and sazan, at an investment of 300,000 to 400,000 rubles.

Kazakhstan is a big consumer of water, and its natural reserves are limited. It is vitally important to use every drop effectively.

Natural Resources

Visiting Various Construction Projects: GEOLOGISTS ALONG THE BAIKAL-AMUR RAILROAD. (By Prof. A. Shestakov, U.S.S.R. Deputy Minister of Geology. Pravda, Oct. 29, p. 3, 1,300 words. Condensed text.) ... Our ministry pays special attention to reconnaissance operations along the route of the Baikal-Amur railroad. In our complicated list of tasks there are two groups that stand out clearly. The first relates to the surveying necessary to lay the line itself. ...

The second involves the discovery of new deposits of minerals in territories adjacent to the route that could serve as a basis for the formation of modern industrial complexes and of large mineral-raw material centers for ferrous and non-ferrous metallurgy and the coal and chemical industries. The railroad will cross through poorly explored territory that offers strong prospects for the discovery of major new mineral deposits.

Large coal basins and ore fields have already been explored along the route. These include most notably the South Yakutian basin of coking coals, the Udokan copper deposits and the asbestos deposits at Molodetzhy, which contain the highest grade of asbestos in the country. Southern Yakutia has rich reserves of iron ore which, together with the coal, form a single large mineral-raw material complex. Especially propitious is the fact that such a unique combination of minerals necessary for the development of ferrous metallurgy was found close to a future railroad.

New deposits of iron, lead, zinc, molybdenum, tungsten, tin, phosphorites and other minerals have been discovered along the Baikal-Amur railroad in recent years and are now being carefully studied. Extensive prospecting will be conducted in the southern part of the Yakut Autonomous Republic and in the north of Chita Province in the forthcoming five-year period to strengthen the raw material base of ferrous metallurgy. Iron ores and large magnetic anomalies have already been discovered there. The most promising of these will have to be evaluated as quickly as possible. Accomplishment of this very difficult task will require great skill and capable organization of work under adverse natural conditions. It is a certainty that the Chara-Olekma region of Yakutia can in time become a new major iron ore base in the Far East. The raw material base for the coal industry must also be widened in Yakutia. By the end of the 10th five-year period we shall have to finish detailed exploration of reserves for the construction of new mines capable of yielding an overall total of 10,000,000 tons a year. In addition, the search will be continued for new coal deposits that can be mined by the open-cut method.

Much work is also being done along the Baikal-Amur railroad to create a reliable raw material base for nonferrous metallurgy. This applies primarily to the already known Udokan copper field. Its reserves will have to be considerably increased.

One of the important tasks of geologists working on the Baikal-Amur railroad is to find natural stores of raw material for the chemical industry. This will affect many branches of the economy. The Selendar apatite deposits on the Aldan are already being appraised, and we are prospecting in the Uda-Selenidzha phosphorite field in Khabarovsk Territory. ...

The main areas for study have already been determined, and the strategy of prospecting and exploration in the most promising regions has been worked out in order to obtain the best results. ...

The railway's construction signified a new stage for geologists, one characteristic of which is comprehensive study of the earth's interior over considerable expanses of territory, which will be the site of large modern industrial centers, well

supplied with mineral raw materials. All this requires a special approach to the appraisal of deposits, whose development must be profitable once the trains start running. Close contact with the industrial ministries, above all the U.S.S.R. Ministry of Ferrous Metallurgy and Ministry of Nonferrous Metallurgy, is important here. ...

The research collectives of our ministry have already begun to prepare maps of promising ore fields. The research conducted by the ministry's institutes and the institutes of the U.S.S.R. Academy of Sciences has been coordinated, and the chief scientific problems requiring most rapid solution have been determined.

The geological studies along the Baikal-Amur railroad take place under difficult conditions in mountainous taiga and in marshes where there are practically no roads at all. ... Unfortunately the geologists are poorly supplied with equipment: They do not have enough all-terrain vehicles, tractors, bulldozers and high-mobility trucks; nor is the situation very good with respect to drilling equipment, mobile homes and prefabricated dwellings. The U.S.S.R. State Planning Committee and U.S.S.R. State Committee for Material and Technical Supply have been slow to resolve questions of furnishing us with modern equipment. Despite intensive growth in the work done in remote districts of the European North, Western and Eastern Siberia, the Far East and the Northeast, the number of caterpillar tractors and carriers has hardly increased at all during the past 10 years, and the need for tractors and bulldozers is being filled by no more than one-third. Drilling equipment is in a sad situation. During the last two years we have received less of it than we should have from the Ministry of Chemical and Petroleum Machine Building. ...

Transportation

Deputy's Tribune: ROADS THROUGH FIELDS. (By T. Gorchag, Chairman of the Gribovskiy District Soviet Executive Committee. Izvestia, Oct. 23, p. 2, 1,200 words. Condensed text.) Moldavian Republic — ... In accordance with decrees of the Presidium of the U.S.S.R. and Moldavian Republic Supreme Soviets, from 360,000 to 480,000 rubles is deducted annually from the incomes of our district's collective farms, state farms, industrial enterprises, transport outfits, construction units and other enterprises and organizations and placed in a special account of the district Soviet executive committee. These jointly contributed funds are used to carry out planned construction of new local roads and maintain existing ones. During the ninth five-year period alone, over 1,500,000 rubles has been spent for these purposes. Over 70 km. of roads have been built and repaired in the district by contractors or by the local enterprises themselves. Now buses and taxis can run between all of the district's communities. But there is still a good deal to be done.

Recently we asked the Kiev branch of the All-Union Highway Design and Survey Institute to work out a plan for the development of the district's roads in 1976-1980. Economists calculate that by that time the average annual transport volume will have increased by 40%. This means that many roads will need to be modernized and some will have to be completely rebuilt. It is proposed that a total of 3,300,000 rubles in funds jointly contributed by enterprises and farms be spent for these purposes. And it is important that this money be used to the greatest effect.

We foresee that intense effort will be required both of the employees of our road maintenance section and of all the collectives of the district's enterprises, organizations and farms. And not just of these people alone. The point is that our own experience has convinced us of how imperfect the organization of local road building is and how difficult it is to acquire scarce construction materials and needed machinery and equipment. Sometimes success in rural road building depends on the initiative and resourcefulness of collective farms, state farms and other organizations. If, for example, a farm or an enterprise can manage to find a contractor, that is fine. But if not, it will have to build the roads with its own manpower. This, of

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BRATSK CONFERENCE ON THE FUTURE OF SIBERIA

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO
PROIZVODSTVA in Russian No 3, 1975 pp 3-27

[Report by Z. M. Ibragimova, correspondent for EKONOMIKA I
ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA, from the scientific-
production conference "Socio-economic Problems in the Development
of Siberia during the Tenth Five-Year Plan"]

[Text] Let us talk about the future of Siberia. But let
us not talk like the dreamers and poets who bequeathed us
emotional prophecies and bright hopes for the "brilliant
future" of this very rich land. In our day the language
of figures, the opinions of specialists, economic experience
and analytical conclusions are more convincing than lofty
prophecies.

Today Siberia forecasts its future at scientific-
practical conferences. The first of these--on the development
and distribution of Siberia's productive forces--took place
in Novosibirsk (1969); the Kemerovsk Conference (1971)
was devoted to the face of Siberia in the year 2000; the
conference in Ulan-Ude (1972) discussed problems of prospective
territorial planning; in Shushenskiy concrete problems of
Siberia's development up to 1990 were examined. And at the
latest meeting in Bratsk problems of the Tenth Five-Year
Plan were discussed.

The main distinguishing feature of the meeting in Bratsk was
the concentration on complex territorial problems and "complex"
representation in the discussion of these problems. For
three days at the Bratsk conference the platform was turned over
to obkom and kraykom party secretaries, administrators of
planning agencies, executives of large economic concerns from

all the oblasts, krays and republics of Siberia and representatives of ministries and central planning organizations.

Everyone was in Bratsk: energy specialists and railroad men, builders and geologists, agronomists and oil men. The very logic of economic development induces a unification of forces separated by industrial specialization. As Comrade Brezhnev said at a meeting with the voters of the Baumanskiy Electoral District of Moscow on 11 June 1971: "The more problems there are to be solved simultaneously, the more urgent is the need to solve them in a coordinated fashion, systematically and purposefully, taking into account the complex and many-faceted relations among individual areas of the country, among branches of the economy and among all spheres of public life. In a word, a composite systematic approach is essential to the working out of responsible solutions."

Conferences like the one at Bratsk are one of the ways to implement precisely this approach to the development of the eastern regions of the country.

1. Into an Era of Industrial Onslaught

In becoming an arena for large scale economic transformations and an experimental proving ground for the realization of large complex programs, Siberia is living through a stormy period of industrial onslaught.

Everything that has been created in Siberia--the unique industrial establishments, gigantic hydro-electric power stations, chemical complexes, etc.--all of it is connected to the achievements of the industries which are energetically developing the resources of the Siberian territories.

During the fifty years between 1924 and 1974, 142 new cities were formed within the bounds of Siberia and the Far East, of these 81 (or 57 percent) appeared in conjunction with the organization of mining and processing of mineral raw materials. More than 60 percent of all the Siberian workers' settlements established during the last 15 years, are connected with prospecting and developing various useful minerals.

What do those areas of the economy which are "subduing" Siberia take pride in? In the millions and billions of tons, cubic meters, and kilowatt-hours which have been extracted, obtained or produced. First place among the country's oil regions goes to Western Siberia.

which has produced 110 million tons of oil in the last year has been called upon to provide nearly 85 percent of the entire nation's increase in oil production in the Ninth Five Year Plan.

Every third ton of Soviet metal is smelted with coal from the Kuzbass.

Siberian industry turns out three-fifths of all the machine building production of the country's East (excluding the Urals).

In the Ninth Five-year Plan Siberian enterprises will account for half of the total increase of commercial wood taken and of the production of saw-timbers.

The Ninth Five-Year Plan must also increase the contribution of Siberian metallurgy to the national output of metal.

And all these large increases in production are tied to the relative cheapness of Siberian raw materials--a ton of Kuzbass coal is one and a half times cheaper than a ton of Donetsk coal, and expenses for Siberian oil are the lowest in the country, etc.

Siberian victories by the branches of industry as a rule mean the introduction of new capabilities and the mastery of new types of resources. However, a sharp reorientation of the national economy from extensive to intensive methods of development on the basis of accelerating scientific-technical progress requires a new interpretation of many indicators. First in line is the question of how and by what means to pursue the further development of the eastern regions of the country. The participants at the Bratsk Conference included among the positive tendencies in the development of Siberia during the Ninth Five-Year Plan the appreciable turn in public production in the direction of intensification; in Siberia at present about 90 percent of the increase in production is obtained through the growth of labor productivity and only 10 percent by increasing the number of employees. A second, no less important circumstance is the improvement in the structure of Siberian production: the share of those employed in the mining industry is decreasing and the percentage of intensive timber processing (the establishment of timber industry complexes) is increasing significantly. In the production of Western Siberia the position of chemistry and petrochemistry is rising as is electroenergy and non-ferrous metallurgy in Eastern Siberian production; newer and newer technologies are appearing for the reworking of basic raw material

The Siberian economy has strikingly demonstrated the fruitfulness of cooperation among the branches of industry in the implementation of large economic programs.

In the Report of the CC CPSU to the congress of the Party, L.I. Brezhnev listed examples of the composite approach to planning and the adoption of major national economic decisions; he included, in addition to programs for improving agriculture and exploring space, the program for putting into production the oil-bearing region of Western Siberia.

We must not fail to mention in this connection the Bratsk-Ilimsk Territorial-Production Complex [TPC] conceived and carried out as the first large-scale, high-efficiency TPC in the territory of Siberia.

Another vivid example of this is the 1971 decision of the CC CPSU and the USSR Council of Ministers on measures for the overall development of production forces in the Krasnoyarskiy kray between 1971 and 1980.

The entire economic experience of Siberia convinces one of the necessity for precisely this approach to the development of new regions. The scale of mistakes and costs of industrial disassociation are capable of bringing the successes of inter-industry cooperation to naught.

2. Fruits of Disassociation

While giving what is due to the achievements of the branch industry approach to the development of new regions, the conference participants at the same time analyzed with uneasiness certain difficult economic situations, the very emergence of which was a consequence of uncoordinated actions by various agencies.

Thus, in many presentations concern was heard regarding the state of affairs in the field of energy without which Siberia's economic prospects are inconceivable.

The characteristics of the United Power System of Siberia are well known: it is one of the largest in the country; its established capacity of 80 stations exceeds 25 million kilowatts; they all work on one general grid, covering territory from the Omskaya Oblast in the West to the Buryatskaya ASSR in the East. The system includes such giants as the Bratskaya and Krasnoyarskaya GES [Hydroelectric Power Station] the Belovskaya and Tom'-Usinskaya GRES,

[State Regional Electric Power Station], those in the Kuzbass and others. The great economy of the stations plus cheap fuel provide the Siberian system with the country's lowest expenditures for electroenergy.

However...

Despite the large surplus of established capacity, consumers are actually receiving only 80-85 percent of the United Power System's capacity. Power engineering in Siberia has entered a period of electroenergy deficit, and until new stations are put into operation the system will be forced to limit consumers.

The reasons? One of them is that the development of power engineering was moving at a slower rather than a faster pace. If, in rough terms, the level of electricity consumption of the branches of industry was developing at 100 percent, power engineering at this same time was developing only at 80 percent. Secondly, the development of the fuel base for the TETs [Heat and Electric Power Station] did not proceed simultaneously with the power engineering. The capacity of the Kuzbass thermal stations exceeds 4 million kilowatts, but the association cannot completely realize this capacity since it "sits" on a scanty coal ration. Thirdly, grid construction is behind: it is sufficient for one line on the main transit line to be cut off and this event, which is essentially ordinary in energy management, can lead to serious breakdowns with corresponding consequences for consumers.

These are not all the reasons which explain the difficulties of Siberian power engineering, but what was cited says a lot: the dependence of the branches on each other is becoming ever greater and the necessity for coordinated actions is becoming ever more acute.

Let us turn to another "life-supporting" branch of industry. The Eastern Siberian Railway. Labor productivity here is 31 percent higher than the average for the system and is approaching the productivity of labor on U.S. railways. The railway serves Krasnoyarskiy Kray, Irkutskaya Oblast and the Buryatskaya ASSR. It partially serves the Kemerovskaya Oblast, and it carries out the basic transportation of freight for Yakutiya from the transshipment ports of the Lena. It consumes 17 percent of the electroenergy "eaten up" by railway transportation in the country; it is equipped with the newest technology and has high economic indicators. The scale is truly Siberian: the volume of work is greater than

on the railroads of the FRG, France, Spain and Italy taken together. And the prospects, which are for large increases, are Siberian: by 1990 transportation on the Bratsk section of the railroad will increase tenfold, and shipments in the region of Achinsk sevenfold, etc. It is assumed that by that year the gross output in the regions served by the railroad will increase ten times, and in the future railway workers will handle more than 70 percent of all shipments.

So what is it that concerns the railroad workers, who have, it seems, quite enough business of their own?

The railway workers are demanding the development of other forms of transportation: water, motor and aviation transportation. When hundreds of train cars stand "in line" in the Lena port waiting to be unloaded, the railway suffers very acutely from the under-development of water transportation.

It is the very same case when industrial branch effectiveness signifies very little in the determination of a national economic effect: individually everything--the train, the automobile, the airplane--carry freight very quickly, but it reaches its destination very slowly, with the speed of animal drawn transportation.

The costs of the non-composite approach send tens of thousands of train cars empty across the entire country every year. The East-Siberian Railway sends 200,000 empty containers to the west and the cars for them--also empty--come from near Minsk.

The costs of the non-composite approach burn up billions of cubic meters of casing-head gas: its use coefficient does not exceed 10 percent. The 1975 production will consist of around 10 billion cubic meters. In 1980 production will be double that and new capacities for processing it, for gas pipelines, etc., are needed in order that the gas does not burn.

The costs of the non-composite approach every year force around 150 graduates of the Bratsk Faculty of the Irkutsk Polytechnical Institute to leave for various areas of the country and at the same time 150 graduates of various VUZ's in the country come to Bratsk on assignment to Bratskgesstroy [Bratsk GES Construction Administration] which would have accepted its people from Bratsk with greater pleasure and with a greater guarantee of "permanent settlement."

All the facts which have been cited--these are the "voices" of the branches of the economy.

But since the superrich Siberian land has been divided into administrative rayons, it is not completely superfluous to listen to the "voices" of the territories which directly reap the fruits and the misfortunes of the industrial onslaught.

In the struggle for a place in the national specialization, for a directive figure in the state plan, seven oblasts, two krais and three autonomous republics of Siberia are putting in the main "trump cards"--evidence of the value of their resources and favorable technical-economic indicators of their development in the near future and over the long range.

Chitinskaya Oblast is concerned with the development of the Eastern-Baykal Mining and Metallurgy Combine: the Baykal area is "burdened" with Udokan and it is dreaming of the world's largest mining-concentrating combine.

Yakutiya, which supplies the country with diamonds, gold, antimony, mica and tin aspires to create a large coal-metallurgical base: in the republic's south, next to deposits of high quality coking coals there are extremely rich deposits of iron ore. Geologists say the reserves run to the billions of tons.

It is essential for the Kuzbass--with its enormous natural reserves--to expand production capacities, to build new enterprises, to reconstruct and to re-equip the coal industry and the Kuznetsk Metallurgical Combine.

Buryatiya needs to develop its mining industry. During the tenth five-year plan mining-concentrating combines will be built here on the basis of the Oshurkovsk apatite deposits and the Ozerninsk deposits of copper and lead as will the Cheremshansk Enterprise for the Mining and Processing of Quartz Sand and the Naranskiy Fluorite Mine. There are also the Aykhaltinskoye deposits of brown coal and prospecting for large zinc and lead deposits is being completed 40 miles from BAM [Baykal-Amur Trunk Line]. Would it not be expedient in this connection to locate the East-Siberian Metallurgical Plant of Lead and Zinc Concentrates next to the Ozerninskiy GOK [Mining and Concentration Combine] on the same grounds?

Of Eastern Siberia's balance of reserves, about 40 percent of the asbestos and more than 20 of the coking coals, mercury, zinc, etc., belong to Tuva. And its claims for capital investment are supported by calculations showing that at the Sayanskiy Asbestos Combine costs will be recovered in a little more than five years.

The map of Siberia is large and no space in a magazine is sufficient to hear the voices of all its territories. With a certain conditionality one can say that Siberia and the Far East have around 75 percent of the predicted reserves of the basic types of mineral resources. In Siberia there are no orphaned lands, impoverished by nature. Another rayon and again millions and billions of tons, cubic meters, kilowatt-hours which have been produced, which are possible or surmised. The present of Siberia is tied to them, to these millions and billions, but its future is tied to them in an even greater measure because millions and billions of rubles are needed for the millions and billions of tons and cubic-meters: the program for developing Siberian resources is a long term program.

Does it need to be said that the territories' claims for capital investment exceed the available resources by many times.

One of the conference participants jokingly calculated the "cost" of the primary requests of the Siberian "territories"--even in a rough calculation it proved to be many tens of billions above the ever growing capital investments.

And the economy of Siberia has received quite a lot--around 130 billion rubles during the post-war years (1946-1973) including more than 60 million rubles in the Seventh and Eighth Five-Year Plans. But even now economic and psychological inertia links the development of Siberia to new construction and the introduction of new capacities. It is obvious that in the Siberian rayons, as the least developed, the role of extensive factors will always be greater than in the country as a whole, but this does not at all lessen the significance of intensification in the economy of Siberia--on the contrary, by virtue of a whole series of specific circumstances the problems of intensifying production are here more pressing than anywhere else.

First of all we are talking about the choice of the most effective structure for production units, a structure which would increase Siberia's contribution to the national economy of the country. The growth of useful mineral output must be accompanied by the organization of composite use of raw materials and by the development of the technology for their thorough processing. The effectiveness of many basic production units is reduced by low labor productivity, primarily of hand labor, in auxiliary and servicing production units. Their reorganization is an important reserve of intensification.

The second task is the purposeful implementation of a technical policy oriented toward the specific features of Siberian conditions. V.I. Lenin's well-known words that the mineral resources of Siberia "are located under conditions that require the best machines" have not lost their topicality today. The enormous concentration of resources, enterprises unique in scale, a shortage of manpower, the opportunity for broad application of electrotechnological methods--such is the "bill" of the Siberian economy to scientific-technical progress which still must settle it. This also signifies the acceleration of Siberia's machine building development and the expansion of the network of construction, planning and experimental organizations.

The third major problem of intensification is the sharp improvement of construction. The construction bases of Eastern Siberia were formed 10-15 years ago, and in the majority of cases their resources do not meet the requirements of modern construction. For this reason it is not accidental that the deadlines for assimilating allotted capital investment are not met.

And finally a fourth aspect of increasing the effectiveness of Siberia's economy deserves special mention. We are talking about eliminating the backwardness of Siberia's infrastructure, a backwardness which accumulated over the decades.

While the claims of the administrative rayons to new enterprises need special examination in each individual case, nonetheless their unanimous dissatisfaction with the state of the production and socio-service infrastructure describes the general Siberian situation, which requires general energetic measures.

They all need roads and transportation, housing and medical services, cafeterias, houses of culture, etc.

The lack of attention paid to the infrastructure is the reverse side of the victorious industrial onslaught; it is one more cost of the non-composite approach which was already discussed.

And it is precisely here that there is the "hottest" point of intersection for the interests of the territories and the branches of industry, a point which can be called the height of contradiction. But while the industries themselves, which control millions of not only cubic meters but also, in contrast

to the territories, millions of rubles--are disentangling the consequences of a lack of coordination in the production sphere, the entire burden of the consequences of all this same lack of coordination falls on the shoulders of the territories.

The problem is acute if we recall that the first stage in the establishment of the territorial-production complexes which were assigned the very job of cutting the Gordian knot of non-coordination, to a certain degree revealed the mechanism of this non-coordination and the aggregate of its sad results.

The pride of Siberia--the Bratsk center--did not escape the well known mistakes and blunders which LITERATURNAYA GAZETA called in its time "the lessons of Bratsk." These lessons briefly consist of the same old thing: "departmental rule" leads to disproportions in the development of a complex: "cities are needed and small towns are built," "housing lags behind production," "communal management does not keep pace with the city's rate of development; the social, cultural and consumer services don't keep up with the growth of the population," and "transportation facilities do not meet transportation needs," Each settlement has its own water supply and heating system, etc. In other words this is not the new TPC but the old communal apartment, where each of 12-15 families had its own little table, its own bucket, floor cloth, bell its own corner in the entrance hall, etc. This way everyone suffers inconveniences, the nonsense of duplication and confusion, but nothing changes because behind the 15 floor cloths is system of relations which have developed with this forced association, tradition, inertia and on and on.

But while these apartments live out their working lives, territorial-production complexes are only being established and they, according to general opinion, are the best form for the structural development of Siberia. Many compare the development of Siberia to the exploration of the world ocean or outer space. For this reason it is so important to analyze the first experience of their establishment and to draw the appropriate conclusions.

3. The Cost of Dinner and a Medical Certificate

The plans, or more accurately the desires, which the territories and the industries have are enormous. New GES's, plants, roads, combines, mines, pits and overpasses--all these are in the future proposals for the tenth and following five-year plans

and very often there is only one thing missing: labor resources. In solving this problem the "voices" of the territories must not go unheeded.

..Against the background of the mighty 120-meter dam of the Bratskaya GES how insignificant looks the builder--man--who suffers the biting insects of the summer heat and the wind in the cold winter frost, who is subject to colds and changes of mood! How "trivial" seem the problems of the bath house and the cafeteria, the club and the nursery school along side the problems of developing the "millions and billions" of tons and cubic meters of Siberian raw materials! How petty are the kitchen gardens and the cattle yards in comparison with just the building of the Bratsk Aluminum Plant, the largest aluminum plant.

But as a consequence of these "trivial details" a negative balance of migration hangs like a troubling question mark over Siberia.

Never in the history of our economy have the problems of intensifying social production been so closely interwoven with the problems of raising the standard of living as they are in our time. Never have production successes depended to such a decisive degree on the living standard of the producers as today. This problem too Siberia interprets in its own way: the reduction in the population of many Siberian settlements is forcing it to dig for the reasons of the migration and to look for new ways of struggling against it.

Much has been done in recent years to increase the material welfare of the residents of the eastern and northern territories of our country. This included the introduction of an addition factor to the base wage of employees in light industry and the food industry and in the non-productive sphere of the southern rayons of Western and Eastern Siberia. It also included increases in the amount of the northern benefits and the inclusion of new rayons and organizations in the category to which the "northern benefits" apply. (Due to these measures in particular the gap has been lessened between the real incomes of the Siberian population and that of other rayons of the RSFSR.) And there has been an increase in the appropriations for housing and socio-cultural construction. Thus the implementation of significant measures to raise the welfare of Soviet people begins with the areas that have the most difficulties in this regard.

Nonetheless even these specific North-Eastern benefits are not in a position to immediately equalize the living conditions in Siberia with the conditions in other economic areas of the country.

Two interviews with conference participants on the subject of how a Siberian lives and what needs to be done for him to live better tomorrow than today are presented below:

V.G. Boyev, Director of the Economics Institute of the Siberian Division of the VASKNIL /All-Union Academy of Agricultural Sciences imeni V.I. Lenin/, Corresponding Member of VASKNIL

"I was in Ust'-Ilimsk at the market: the vegetables there are not cheap. And this was in the fall, at the height, so to speak, of the vegetable season. The average wage of a construction worker at the Ust'-Ilimskaya GES is 225 rubles. Even for a wage like that the vegetables are quite expensive. I am convinced that food difficulties are one of the main reasons that half of the workers in Ust'-Ilimsk left last year.

"When you approach Bratsk by airplane, the number of greenhouses next to homes is striking: the sun is reflected in their glass roofs. And I teased the party secretary of the Altayskiy kraykom who was flying with me:

"There are more greenhouses in Bratsk than in Barnaul."

"He countered: 'We are not oriented toward the private sector!'"

"What do you think--he turned out to be right! I am conversing with Bratsk residents:

"How is the supply of vegetables?"

"The person who has a greenhouse does fine, the person who doesn't have one does badly."

"And meat?"

"Not good."

"And this is in Bratsk! There is a sea of heat, light and energy--and difficulties with food! It seems that this might be a place to establish an agro-industrial complex with recruitment of industries which are capable of providing agriculture with a material base!

"After all, in the same Irkutskaya Oblast the first steps along this path have been taken in the Cheremkhovo region. Located there are a poultry plant and a dairy complex, etc. which use the material patronage of the enterprises.

"There is also another example. I have in mind the specialized farms in the Tyumenskaya and Tomskaya oblasts. Well, for example, the Surgutskiy Sovkhoz of petroleum workers. The central farmstead of the sovkhos is the settlement Belyy Yar, located 12 kilometers from Surgut. The summer there is short but warm and the climatic conditions make it possible to raise potatoes and other vegetables. From 1966 to 1972 the sovkhos spent more than 10 million rubles on the construction of production, cultural-service quarters and the organization of public services and amenities of the territories, and this money was mainly from the petroleum workers. There are mechanized farms here, a large poultry plant and thousands of square meters of winter and summer greenhouses. The oil industry board provides the sovkhos with transportation, technology and spare parts. As a result the settlement is continuously supplied with milk, eggs and partially supplied with vegetables and fresh meat.

"There are, in my view, two paths for the development of agriculture in Siberia: agro-industrial complexes and small bloc-type complexes as in the oil areas.

"The practice of producing food stuffs locally prompts objections which are usually supported by comparative calculations which are persuasive of the fact that to bring in the food, even by airplane is cheaper than to produce it locally. It seems to me that such calculations are insufficient to solve this problem. Theoretically bringing it in is justified, but in practice it often leads to an absence of food stuffs: bad road conditions and weather unsuitable for flying and those first settlers sit without meat and at times without potatoes.

"In regard to the agro-industrial complexes themselves there can be no routine recommendations. Each TPC has its own specific features and scientific recommendations must take them into consideration. A good scientific undertaking is necessary, which is now, speaking directly, in miserable condition. It is essential to develop agricultural science in Siberia--without it we will not solve the problems of food supply in the new areas to be developed."

The second interview is with B.B. Prokhorov, Head of the Sector of Medical Geography of the Institute of the Geography of Siberia and the Far East of the Siberian Division of the USSR Academy of Sciences:

"The most accurate and objective indicator of the state of affairs is the health of the population. To foresee the medical consequences of the industrial development of new territories is a task which by itself is not standardized, and the work, I must say, is not effective since a medio-geographical forecast is sometimes a negative forecast. According to the research data of scholars headed by Academician V.P. Kaznacheyev, of the Academy of Medical Sciences, work time losses due to the rate of illness in Siberia are appreciably higher than the country's average. Why? I think I am saying nothing new: because of the lack of attention given to these questions, to the inability to plan for the consequences of the technical-economic decisions.

"We will take Ust'-Ilimsk. This is not only a continuation of the good traditions of Bratsk, but also a repetition of its mistakes. As you know, up to now no unified plan has been approved for the development and distribution of projects in the economic network. A site was set aside for the construction of the city on the right bank, but it is being built..on the left--spontaneously and feverishly: after all, there has to be someplace to live! (Incidentally, A.N. Semenov, head of Bratskgesstroy, talked about this same thing at the conference: 'Unfortunately the mistake of Bratsk was repeated in Ust'-Ilimsk too. While working out the technical-economic basis for the construction of the GES not one agency announced the construction of an enterprise and correspondingly the plan for the construction of the GES did not provide for cooperation in the construction of general production units and engineering structures or in the formation of a transportation network or of the city.') And, of course, the settlement will receive civil rights despite its unplanned quality, despite the future difficulties. The problem is that the settlement will be located on the bank of an unfreezing polynia, a patch of water in the midst of ice. In warm years the length of the polynia will reach up to 5-10 kilometers; it is obvious that we will receive here a center of active fog formation. And if we take into consideration that smoke wastes will be coming from the timber industry complex, then it is not difficult to imagine that we will have to deal with worsening conditions of life.

"But the nine-storey buildings are growing and, of course, no one will take down an unplanned, but built settlement. According to our classification this is a hypocomfort zone, i.e., a zone of reduced comfort and this means an increased rate of illness. When there are 120,000 residents in Ust'-Ilimsk illness will cause many millions of rublesworth of damage. This means that lowering the rate of illness even by only 20 percent, would save the government several millions every year.

"According to the approximate calculations Irkutskaya Oblast alone loses 350 million rubles due to lost work capability of the population. It is well known that in the region during the period of development, the rate of illness was many times greater than the average for the Union. All this is not to frighten but in order to direct the attention of economists and planners, industrial organizers and researchers to these problems too. In the name of what are we developing the new areas and the resources of Siberia? In the name of a better life for man. Not only for he who will come after us, but also for he who is performing the mighty work of development. And in the meantime he does not always live well. At present they attract a man to the difficult areas with economic stimuli, while not always taking into consideration the health of the worker, our main resources. And, in my opinion, the whole problem is that too few people are working on 'human problems'; there is no comparison with the army of those who are drawn into 'technical problems.' There are no insoluble problems--they are insoluble only when they do not solve them. Developing scientific research in this area means suggesting ways out in practical situations."

These two interviews are only two opinions of two specialists from the many thousands of people who are in one way or another concerned with the problems of Siberia.

Address a similar question to architects and they will tell you that in the majority of Siberian cities the process of forming a truly city appearance has not yet begun, that people want to love not only their GES's, but also their cities and here in Siberia there is a wealth of work.

4. Time of the Experiment

Here is how researchers from the Institute of Economics and the Organization of Industrial Production, Siberian Division of the USSR Academy of Sciences evaluate the situation:

national economic combination. They substantiated the necessity for locating groups of machine building enterprises, electro-metallurgical enterprises and enormous complexes of enterprises of light industry and food industry in this complex. The scientists also had to answer a second question: how to best locate the designated enterprises and how to arrange them territorially. The problem was solved with the aid of economic and mathematical models; as a result the most favorable sites for the spatial distribution of production forces were selected.

And what came of it?

Deadlines for construction and putting industrial establishments into operation are not met. Industrial centers are planned and built without consideration of significant expenditures for the construction of roads between centers. In the Oznachenny settlement the organization of an industrial center was begun. It was to be large and would be built over a period of many years. There were many people building but for now no main builder. There is no plan for the industrial center, and no general plan for the city, etc.

That is, everything is just the same. And all for the same reasons. The model has been worked out, but not the general plan for the establishment of the complex, a plan which would stipulate assignments to ministries according to the period and amounts of construction financing. There is no organ which is responsible for fulfilling the plan for the establishment of the TPC and the coordinating management of the general-complex, and general-center elements of the production and social infrastructure.

The measure which the scientists proposed was to single out even now the first and foremost large complexes as independent administrative units (with the rank of autonomous oblasts and krays) within the oblasts and krays and to make the TPC's the objects of composite territorial planning. In their opinion, the time has come to conduct an experiment on the establishment of based upon the principles of unified management: to concentrate the entire infrastructural preparation in one set of hands and to carry out the financing in a centralized way and not through the ministries. One of the TPC's which is being newly created in Siberia could become a testing area. It is a proposal which in any case the territories support.

From a report by G.I. Chiryayev, first secretary of the Yakutskiy Obkom of the CPSU and I.P. Avdeyev, head of the economics department of the Yakutskiy Branch of the Siberian Division of the USSR Academy of Sciences:

We adhere to those opinions already expressed at the conference regarding the necessity to establish some agency which would coordinate the preparation and the actual development of the resources of the territorial-production complex. It is important for this agency to possess real opportunities to combine material financial and labor resources. It seems to us that it would be most effective, for example, to establish a board for the combined development of the Aldan-Chul'man-Udokan region as an organ of the national Gosplan in as much as it is the union ministries, mainly with the participation of Gosplan of the RSFSR, which will be working there. This could be a kind of experiment in the implementation of a composite program for the development of the resources of a concrete rayon which has important significance for the national economy of the country as a whole.

..Does everything which has been said mean that the very word combination "territorial-production" unites two independent concepts which for the present signify not unity, but rather the single combat of two forces?

During the discussion of this problem, a "sore" one for Siberia, there was another positive suggestion which was expressed. It was put forth by Professor Ivan Mikhaylovich Syroyezhin, a participant at the conference, head of the chair of economic cybernetics of the Leningrad Economics and Finance Institute imeni Voznesenskiy, doctor of economic sciences:

"Recall Engels' idea that all economic relations are manifested in the end as interests. It is necessary to force the ministries to unite when clashing with the interests of the territories, and for this it is essential to change the method of distributing and using resources. For a start perhaps a wage fund should be handed over to the local organs of power."

In the East the economy is not so closely linked and it is not so organic as in the West, and here such a measure would be especially effective.

...Maybe it is possible? Maybe it is necessary? Maybe the Tenth Five-Year Plan is the time for such experiments? So that 25 billion cubic meters of accompanying gas on the petroleum plantations of Siberia are not burned? So that the level of real incomes of the Siberians would at least be equal with the

nation's average? So that the Siberians might love their own cities as well as their GES's and gigantic enterprises? "

All these are the problems which trouble the minds of people on the threshold of the Tenth Five-Year Plan. Of course, this report does not come near to exhausting all the fullness of the territorial, industrial and inter-agency problems which were discussed by the participants at the Bratsk conference. But one thing is obvious: the unanimous striving for comprehensiveness, for improvement of the economic structure and clearly this will be the basis for fulfilling those grandiose goals of the five-year plan which the country sets before Siberia.

5. Possible Contours of the Five-Year Plan

In order to outline more clearly the contours of the Tenth Five-Year Plan for Siberia and to more accurately imagine the scale of the problems which lie ahead, it would be useful to make a small digression into the recent past.

The First All-Siberian Scientific Research Congress was opened on 15 December 1926 in Novosibirsk. The chairman of the Siberian kray ispolkom spoke at the opening of the congress:

"Almost everywhere the current opinion has developed that Siberia is a wealthy land, but if we ask exactly what resources Siberia has and how they might best be used, we hardly receive a sufficiently exhaustive answer and at times it is easier to receive an answer regarding the resources of distant Canada than of our native Siberia."

In Siberia the goal of industrializing the country ran up against the fact that the kray had been little studied: "up to the present time Siberia is 75 percent almost completely unstudied and unresearched " "While everyone goes around saying that Siberia is a gold mine, we do not have the data to affirm this." "Despite the scientific work of two centuries, we still do not know with any accuracy at the present time where what and in what quantities is located or from which end it would be more economical and more expedient to industrialize the kray...", etc.

And although it is now well known that the concept of long range development of Siberia's production forces, which was worked out at the scientific congress, was subsequently subjected to substantial changes, this does not lessen the significance of the congress itself. Without its materials and recommendations both versions of the general plan for the development of the Siberskiy Kray (1927 and 1929-1930) would have been impossible.

The Conference in Novosibirsk in 1969. Academician M.A. Lavrent'yev, chairman of the Siberian Division of the USSR Academy of Sciences, spoke at its opening:

"I want to talk now not simply about the Siberia of the future, but also about the future of Siberian science. And not only because this area of human endeavor is closer to me than all the others, but also because the harmonious development of this kray, enormous in its dimensions, and the complete development of its resources will become possible only when the newest scientific discoveries are introduced into all the branches of the national economy."

Talking about the resources of Siberia, M.A. Lavrent'yev and his listeners know precisely what this means: according to the data of the conference materials the basic resources of lead, coal, gas, oil, copper etc. are concentrated in Siberia.

The national economy's needs for mineral raw materials is doubling every 10 - 15 years. Now it is well known where to get the mineral raw materials, but how to get them with the least expenditures and by what means to obtain the maximum when extracting useful minerals?

Siberia in 1969--this is 20 million people producing nearly a tenth of the total national product. Siberia's role as main fuel-energy base for the country has already been defined. It is hard to imagine our country's metallurgy without the coal of the Kuzbass. Siberia is a leading producer of aluminum. But...Three-quarters of Siberia's machine building production is shipped to other areas and four-fifths of machines which Siberia needs are shipped in; further, they are not suited to the harsh Siberian conditions. In comparison with the fuel and raw materials base, the processing units of production are poorly developed. The gross agricultural product is decreasing.

And although the past five years have made some corrections in the 1969 forecast (mainly in the forecast figures which in certain cases proved to have been set too low, specifically for oil production), the conference materials played a large role in determining the tendencies of Siberia's development. The recommendations of the conference were taken into account in working out the Ninth Five-Year Plan for the development of the country's national economy.

And here in the "forests" of forecasts, proposals and rough drafts is the Tenth Five-Year Plan for Siberia.

If we consider the development of Siberia as a natural process in the consistent implementation of large regional programs (the Uralo-Kuznetskiy and the Angaro-Yeniseyskiy projects, the development of the Western Siberian oil and gas bearing province, the Bratsko-Ilimskiy, Krasnoyarskiy, and the Irkutsko-Cheremkhovskiy complexes, then the Nizhne-Angarskiy the Sredne-Yeniseyskiy projects, etc.), then such a new problem as the economic development of the BAM zone must be named one of the primary programs in the Tenth Five-Year Plan. We are talking not only about the Baykal Amur Trunk Line itself, the main construction project of the country in the near future. The national significance of the trunk line is determined by the necessity to develop the natural resources over an enormous territory and in the future the BAM zone will be an aggregate of effective territorial-production complexes.

G.L. Tarasov, head of the department of SOPR /Council for the Study of Productive Resources/ of Gosplan USSR drew for the conference participants a picture of the future of the BAM zone. A very cursory, and still quite approximate survey of the prospects of the "BAM-area" strip may look like this.

At the beginning of the route, from Ust'-Kut, the line passes through the territory of the Irkutskaya oblast which is very promising for oil and gas. But the basic resources of this area are the high quality forests. It is probable that a timber industry complex will be located here, possibly in the Kazachinskiy Rayon. Two large rivers, the Lena and the Kirenga, with their tributaries--completely meet the industrial and agricultural water needs.

To make use of the Lena for transportation and power needs, it would clearly be wise to build on it several hydroelectric centers with hydroelectric stations and navigation systems. Specifically, a large hydroelectric center could be constructed in the area of the city of Kirenska (above the mouth of the Kirenga)--it would improve the navigation conditions on the Lena up to the port of Osetrovo.

Further on the trunk line passes through Nizhne-Angarsk, at the northern extremity of Lake Baykal. A large number of deposits of non-ferrous and rare metals have been discovered in the areas of the Northern Baykal Plateau. These are the pre-requisites for the construction of a series of conveniently located and sufficiently efficient mining and concentrating combines.

Then--the north of Buryatiya. Not far from the border with the Chitinskaya Oblast a unique deposit of chrysotile asbestos "mining silk"--is located near the Molodezhnoye settlement. A large mining and concentrating combine to be built here will supply many enterprises of the asbestos cement industry of Siberia and the Far East with raw materials.

The hydroenergy resources of the Vitim and its tributaries the Tsipa, Mui and Amallat are evaluated at 5.5 million kilowatts; a cascade of hydroelectric stations is possible.

And the undeveloped reserves of timber in the northern regions of Buryatiya are calculated to be nearly 500 million cubic meters. Therefore, one more large timber industry complex producing cellulose, paper, wood fiber board and saw mill products.

Along the path of the road in the Kalaro-Charskiy Rayon of the Chitinskaya Oblast are the very large Udokanskoye copper deposits. This is an area of difficult natural conditions and high seismicity. But BAM is making the construction of a mining and concentrating combine something real.

The question has come up of establishing a single Aldan-Chul'man-Udokan complex: in the south of Yakutiya there are many mineral resources and enormous reserves of pit coal and iron ore. Supplying this TPC with food can be done from the contiguous Amurskaya Oblast where agriculture is developed.

Next is the Zeyskiy industrial center, an area with significant forest tracts and reserves of water and mineral raw materials, then the Khabarovskiy Kray, the Solnechnyy settlement with a large tin producing combine, etc.

Petrochemistry and the production of petroleum and phosphorus fertilizers will receive broad development on the basis of Tyumen petroleum and Vilyuysk petroleum.

Even this highly oversimplified sketch gives some idea of the volume of work which must be done to develop the BAM zone and which, of course, is planned for more than just the Tenth Five-Year Plan.

Speaking at a meeting with the voters of the Baumanskiy electoral district of Moscow in 1974, Comrade L.I. Brezhnev said: "Every five-year plan is an appreciable step in the development of our society. But the tenth, one can say the

anniversary five-year plan, will occupy a special place. And not only in terms of the planned accomplishments which, naturally, is growing. There is the additional fact that in accordance with the directions of the 24th party congress, the new five-year plan is being prepared together with the general prospect for the development of the national economy during the years 1976-1990 and the plan will become a component of it."

And during the Tenth Five-Year Plan, in addition to the construction of the road itself, numerous problems of the effective development of the zone will be decided--from an appraisal of the natural environment and the natural resources to the selection of possible sites for future complexes.

But no matter how grandiose are the projects related to the construction of BAM and the development of the new zone, the goals of the Tenth Five-Year Plan in Siberia are in no measure exhausted by them.

In 1980 Western Siberia will supply nearly half of the union's petroleum production. The rate of developing gas and condensate reserves is growing sharply; if the Ninth Five-Year Plan can be called the beginning the "gas subject" of Siberia, then the tenth will become its culmination.

At the same time that oil and gas pipelines will be brought in, the first lines of the Tomsk , Tobol'sk and Achinsk petrochemical complexes will be introduced. It is proposed to increase oil refining capabilities so much that it will be completely unnecessary to ship petroleum products from the European areas of the country. Particular attention in the forthcoming five-year plan will be paid to the development in Siberia of a new branch of industry for the treatment of incidental petroleum gas: the immediate goal is to use 80-90 percent of it.

In the Tenth Five-Year Plan the Angaro-Yeniseyskiy project will see the completion of the Ilimsk center, part of the Bratsko-Ilimskiy energy-industrial complex and the energetic construction of the Sayanskiy TPC.

The realization of the Nizhne-Angarskiy project will also begin: the construction of the Boguchanskaya GES, the development of new technologies of timber industry production and the introduction of large condensation stations.

In forecasting the development of an agro-industrial complex, scholars think that by 1980 the gross agricultural product may exceed by more than one and a half times the level of the average yearly production of the Ninth Five-Year Plan. To reach this it is essential to establish agro-industrial associations and to put agricultural on an industrial base everywhere in Siberia; during the Tenth Five-Year Plan the productivity of agricultural labor must increase nearly twofold in comparison with the Eighth Five-Year Plan.

Scholars link all the programs and projects for the economic transformation of Siberia with the essential condition of improvement in the life of the Siberians, and this means a relatively rapid increase in nominal incomes, broader opportunities for their realization, a qualitative jump in the development of the social and consumer infrastructure, etc. Industry on behalf of man--that is the truth which is transformed from a publicist slogan into economic reality.

Even these individual sketches for a portrait of the future Siberia make it possible to judge the scope and diversity of the goals of the Tenth Five-Year Plan and the more long range prospects. The grander are the designs, the more careful and intense must be the preparation for their implementation. The Tenth Five-Year Plan is not only large scale projects and colossal construction jobs, it is also difficult problems. And if they are not solved, many forecasts and preliminary plans may remain unrealized.

PHOTO CAPTIONS

1. p 9 Irkutskaya Oblast. Ust'-Kut--the extreme western point of BAM. The main line being built here will connect with the Tayshet-Lena railroad.
2. p 23 Tomskaya Oblast. This year the experimental production farm of the Tomsk Model Agricultural Station will turn over to the state 8000 tons of grain. This is significantly more than the plan. On two threshing floors the farm put into operation 36 grain drying silos (in the picture). The capacity of each is 30 tons. Photo by A. Polyakov

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